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Catalogue of the types
& figured specimens in the
Geological Department

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MUSEUM HANDBOOKS

[No. 1]

CATALOGUE

OF THE

TYPE FOSSILS

by
Herbert Bolton
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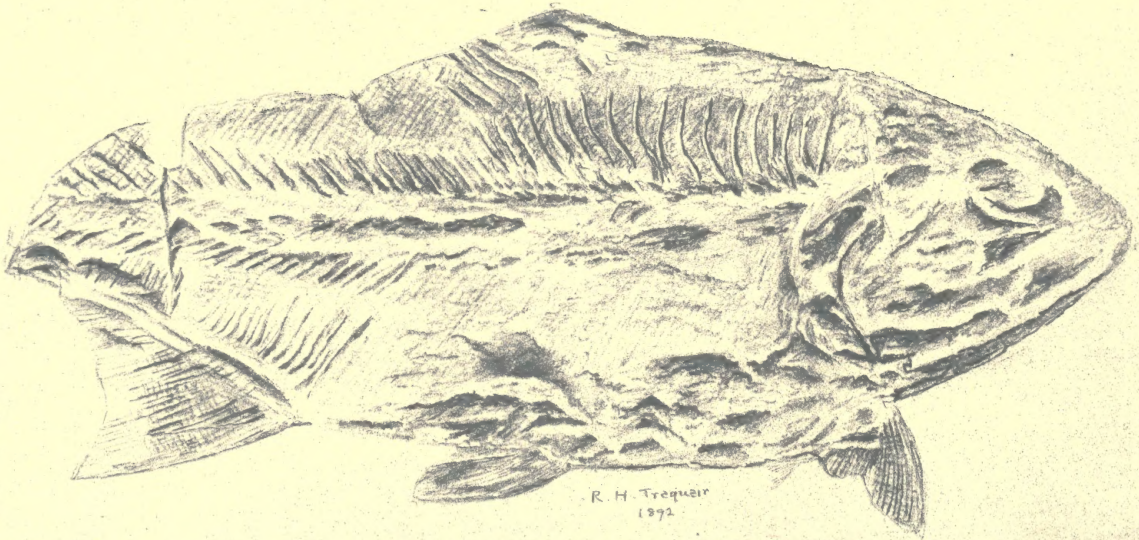
R. H. Trequair
1892

The Manchester Museum
Owens College

MUSEUM HANDBOOKS

CATALOGUE

OF THE

TYPES & FIGURED SPECIMENS

IN THE

GEOLOGICAL DEPARTMENT

BY

HERBERT BOLTON

Assistant Keeper in the Museum

MANCHESTER:
J. E CORNISH

1893

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PREFACE.

DURING his work of arranging the Palæontological collections of the Museum, Mr. Bolton has noted the various type fossils as they presented themselves for consideration, and lists of these have been forwarded to Mr. A. Smith Woodward, the Secretary of the British Association Committee, for their registration.

When the meeting of the Museums' Association was about to be held in Manchester in July, 1892, I suggested to Mr. Bolton that a list of the types and figured specimens, as complete as he could compile, would be an appropriate communication to that Society. The present Catalogue is the result of his labours in that direction. References have been given to the more important papers treating of the species under consideration, and in almost every case these have been verified by consulting the original sources. The descriptions of two forms—*Cyclus Scotti* and *Myriolepis Hibernica*—were drawn up for this Catalogue, but have been published in the *Geological Magazine* whilst it was in the press. The Museum is much indebted to Dr. H. Woodward, F.R.S., and Dr. R. H. Traquair, F.R.S., for their kindness in communicating the respective descriptions and drawings.

W. E. H.

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INTRODUCTION.

AMONGST the many fossils which a museum may possess, those which have the distinction of being the first described of their kind are the most valuable. Serving, as they do, as types or standards of genera and species, their precise whereabouts cannot be too well known. With the object of extending this knowledge, the present list of the types and figured specimens in the possession of the Manchester Museum has been prepared.

The present Geological Section of this museum has been mainly formed by the fusion of the following collections:—

Bowman Collection.—A collection of Silurian and Coal Measure fossils. Acquired by gift by the Manchester Geological Society in 1842, and transferred to the Museum in 1864.

Bird Collection.—A general collection of fossils and minerals, containing many excellently preserved specimens. Acquired by purchase, 1883.

Cumberland Collection.—A collection of Crinoids, from the Carboniferous Limestone of Bristol and neighbourhood, and also of Apiocrinus from the Bradford Clay. Amongst the latter are the originals of the figures in Cumberland's "Reliquiæ Conservatæ." Acquired by purchase by the Manchester Geological Society, in 1842, and transferred to the Museum in 1864.

Darbishire Collection.—A general collection of fossils of all formations, presented over a period of years, from 1875 onwards.

Boyd Dawkins Collection.—A large collection of fossils from all formations, and including the major part of the Vertebrate and other remains obtained by Professor Dawkins from caves and fissures of Pleistocene Age. Acquired by gift, 1889.

Edwards Collection.—A large collection of fish and other remains, from the Old Red Sandstone of Caithness. Acquired by purchase, 1891.

Finlay Collection.—A large series of Neolithic Implements from Greece and the Greek Isles. Acquired by gift, 1877.

Forbes Collection.—The collection of the late Professor David Forbes, consisting of fossils, minerals, and rock-specimens. Acquired by purchase, 1877.

Franks Collection.—A large series of Neolithic Implements from Scandinavia. Acquired by gift, 1877.

Gibson Collection.—This consists of fossils from the Yoredale Shales, and Millstone Grit Series of the Vale of Todmorden, Yorkshire. Most of the specimens are types of the genera and species described by the late Captain T. Brown. Some of the species described by him have not yet been traced. A few specimens bear MS. names. Acquired by gift by the Manchester Geological Society, in 1843, and transferred to the Museum in 1864.

Homfray Collection.—A small collection of Cambrian fossils, many of which are types described by Salter and Hicks. Acquired by gift, 1875.

Lightbody Collection.—A magnificent collection of fossils from the Cambrian and Silurian formations, containing types described and figured by Salter, Woodward, Blake, and others. Acquired by gift, 1875.

Roeder Collection.—A general collection of fossils and prehistoric remains, including a very complete series of fossils from the Permian Marls of Manchester and the Zechstein of Gera, Thüringen. Acquired by gift, 1890-91.

Thompson Collection.—A collection of Neolithic Implements and remains from the Lakes of Brienne, Switzerland. Acquired by gift at various times.

Toulmin Smith Collection.—A collection of sponges from the Upper Greensand and Chalk. Acquired by gift.

Waters Collection.—A large collection of European Tertiary fossils. Acquired by gift, 1885.

Williamson Collection.—A large general collection of fossils, especially rich in specimens of the fauna and flora of the Yorkshire Oolites. Several examples of the latter are types figured and described by Lindley and Hutton in their "Fossil Flora of Great Britain." Acquired by gift, 1888.

In drawing up this catalogue I have received assistance, which I desire gratefully to acknowledge, from Professors Dawkins and Williamson, of the Owens College; Dr. H. Woodward and Mr. A. Smith Woodward, of the British Museum; Dr. R. H. Traquair, of the Edinburgh Museum of Science and Art; and Messrs. F. A. Bather, J. W. Davis, R. Kidston, E. T. Newton, and Mark Stirrup. I have also to thank the Palæontographical Society, the Geological Society, the Clarendon Press, and Messrs. Taylor and Francis for the use of illustrations.

LIST OF SPECIMENS IN SYSTEMATIC ORDER.

VEGETABILIA.

PTERIDOPHYTA.

Carpolithes conica, Lindley and Hutton, 1837.

1837. *Carpolithes conica*, Lindley and Hutton, Foss. Flora, pl. clxxxix., figs. 1, 2, and 4.

Type.—A trigonal conical fruit, bearing a circle of tubercles round the base.

Malton, Yorkshire.
Coralline Oolite. *Coll. Williamson.*

Carpolithes Bucklandi, Lindley and Hutton, 1837.

1837. *Carpolithes Bucklandi*, Lindley and Hutton, Foss. Flora, pl. clxxxix, figs. 3 and 5.

Type.—A trigonal conical fruit, more swollen than *C. conica*, and with a smaller base, but differing chiefly by the presence of tubercles over the whole surface.

Malton, Yorkshire.
Coralline Oolite. *Coll. Williamson.*

Lepidophyllum majus, Brongniart, 1828.

1828. *Lepidophyllum majus*, Brongn., Prod. Hist. Végét. Foss., p. 87.
1887 *Palmacites*, Stirrup, Trans. Manch. Geol. Soc., xix., p. 233, pl. ii., fig. 1.

The impression of a terminal cluster of leaves upon a block of black shale; the opposite half (obverse) is in the possession of W. Stewart, M.D., Bank House, Bacup.

Old Meadows Colliery, Bacup, Lancs.
Lower Coal Measures. *Donor, J. Lord.*

Lepidodendron, sp., Williamson, 1883.

1883. *Lepidodendron*, Williamson, Phil. Trans., pl. xxxiv.

Dichotomous branch of a Lepidodendron, terminating in smaller Halonial branches. Figured plaster cast; original in the Leeds Museum.

Locality (?)
Middle Coal Measures. *Coll. Williamson.*

Halonia regularis, Binney, 1872.

1872. *Halonia regularis*, Binney, Plants Carb. Strata, Palæont. Soc., pt. 3, p. 94, pl. xviii., fig. 38.

Professor Williamson informs me that he is giving further details regarding this specimen in a Memoir now in the press.

Peel Delph, Bolton-le-Moors, Lancs.
Millstone Grit. *Donor, Mr. Higson.*

Calamites Suckowii, Brongniart, 1828.

1828. *Calamites Suckowii*, Brongniart, Prodr. Hist. Végét. Foss., p. 37.
1886. „ „ G. Wild, "An Interesting Discovery of Calamites," Trans. Manch. Geol. Soc., xviii., p. 447, wood-cuts A, B, and D.
1871. „ „ Williamson, Phil. Trans. Roy. Soc., London, p. 497, pl. xxvii., fig. 34.

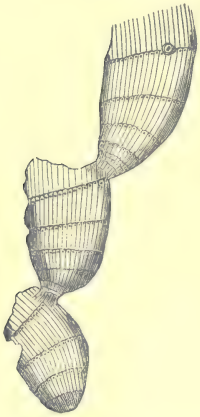


Fig. A. *Calamites Suckowii*, showing mode of origin of rhizomes. Bardsley Colliery.

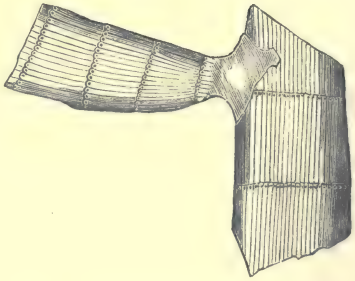


Fig. B. *Calamites Suckowii*. Bardsley Colliery, Ashton-under-Lyne.

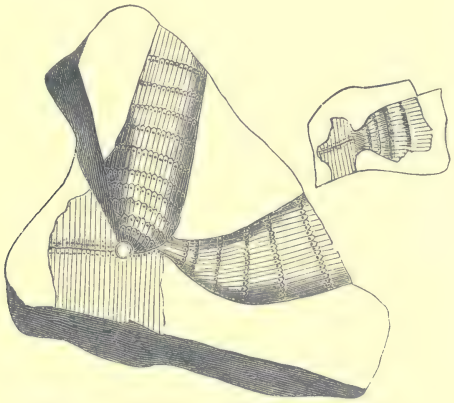


Fig. D. *Calamites Suckowii*, giving off two rhizomes. Limehurst Colliery.

ORIGINALS OF WILD'S FIGURES.—Basal portions of stem, showing mode of origin of roots.

Lancashire.

Coal Measures. *Donor, G. Wild.*

ORIGINAL OF WILLIAMSON'S FIGURE.—Portion of stem, with areola from which rhizome originated.

Locality (?)

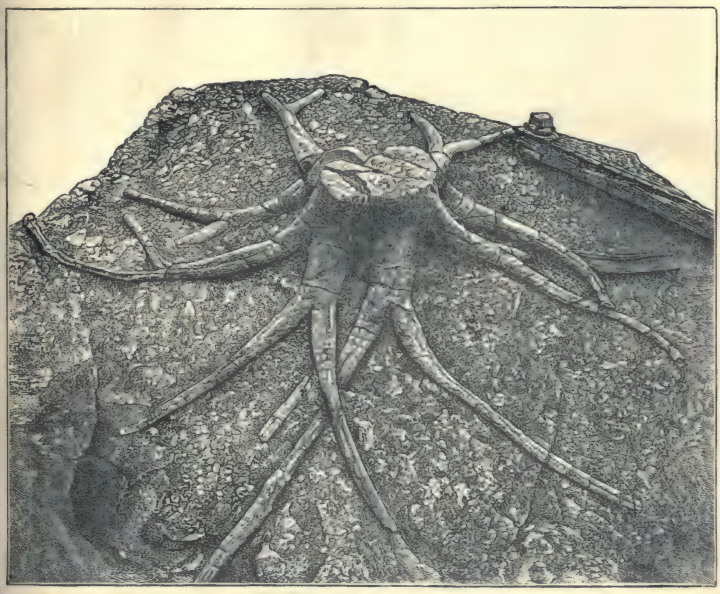
Coal Measures.

Stigmaria ficoides, Brongniart, 1822.

1822. *Stigmaria ficoides*, Brongniart, Class. de Végét. Fossiles, p. 9.
1848. „ „ Hooker, "On Some Peculiarities in the Structure of Stigmaria," Mem. Geol. Surv. ii., pt. 2, p. 431, pl. i., figs. 1 and 2.
1887. „ „ Williamson, Monogr. Stig. ficoides, Palæont. Soc., p. 45, pl. xv., fig. 80, cuts 7 and 8.

ORIGINAL OF HOOKER'S FIGURES.—Fragment of uncompressed Stigmarian root, showing a series of deep pits or cavities in which the roots originated.

Peel Quarry, Lancs.
Millstone Grit. *Donor, Mr. Ormerod.*



Specimen of *Stigmaria ficoides*, from the Lower Coal Measures, Clayton, near Bradford. Height of stump, 3 ft. 9 in.; diameter, 4ft. 4 in.; length of roots, 8 ft. 6 in. to 17 feet; diameter close to stump, 16 to 21 inches. (From a photograph.)

ORIGINAL OF WILLIAMSON'S FIGURES.—A huge specimen of Stigmaria ficoides, showing the division into four primary roots at the base of the trunk, and the formation of secondary roots by a regular bifurcation. The specimen, as at present mounted, covers an area of 360 square feet. The trunk, having a diameter of 4 ft. 4 in., is preserved to a height of about four feet.

Clayton, Bradford, Yorkshire.
Millstone Grit. *Donors, Professor Williamson and Friends.*

Stigmarian Trunks.

1841. *Stigmarian Trunks*, Bowman, "Foss. Trees found near Manchester," Trans. Manch. Geol. Soc., i., p. 115, pls. iii. and iv.
1887. „ „ Williamson, Monogr. Stig. ficoides, Palæont. Soc., p. 5, pl. i., figs. 1 and 2.

Two plaster casts of Stigmarian trunks found at Dixon Fold in making the railway from Manchester to Bolton, in 1837. It is a little doubtful whether Bowman's figures were taken from the plaster casts or from the original trunks. In figuring the plaster casts, Professor Williamson thus alludes to them:—"On examining the trees discovered at Dixon Fold it soon became obvious that the shaly materials of which they were composed would give way, however carefully they might be protected from the weather. Hence an Italian artist named Bally, well skilled in the art of making moulds, was employed to obtain exact casts of the two most important of the above trees." These casts are now in the Manchester Museum.

Dixon Fold.

Lower Coal Measures.

Rhabdocarpus multistriatus, Presl.

1887. *Rhabdocarpus multistriatus*, C. Dugdale, Trans. Manch. Geol. Soc., xix., p. 232, pl. i., fig 4.

A small ovoid fruit, marked on its exposed surface by longitudinal ribs.

Ravenshore, Haslingden, Lancs.

Millstone Grit Series. *Coll. Dugdale.*

GYMNOSPERMÆ.

Cordaites borassifolius (Sternberg).

1820-23. *Flabellaria borassifolia*, Sternberg, Vers. i., fasc. 2, pp. 27 and 32.
1887. *Cordaites* „ C. Dugdale, Trans. Manch. Geol. Soc., xix., p. 229, pl. i., fig. 2.

A large leaf, twelve inches in length.

Elton Bank Quarries, Edenfield, Lancs.

Millstone Grit Series. *Coll. Dugdale.*

ANIMALIA.

PROTOZOA.

Saccammina Carteri, Brady, 1871.

1849.	*Nodosaria fusuliniformis* (?)	McCoy,	Ann. and Mag. Nat. Hist., (2) iii., p. 131.
1869.	*Carteria sp.*	Brady,	Report Brit. Assoc., p. 372.
1871.	*Saccammina Carteri*	Id.,	Ann. and Mag. Nat. Hist., (4) viii., p. 177.
1876.	„ „	Id.,	Monogr. Carb. and Perm. Foraminifera, Palæont. Soc., p. 57, pl. i. fig. 1.

Type.—A mass of dark-coloured limestone, with the upper surface considerably weathered, so that the Foraminifera present the appearance of small concretionary bodies. Presented by the late Dr. H. B. Brady to Professor Williamson, and by the latter to the Museum.

Elfhills, Northumberland.
Carboniferous Limestone. *Coll. Williamson.*

BRACHIOPODA.

Lingula cornea, Sowerby, 1839.

1839.	*Lingula cornea*,	Sow.,	in Murch., Sil. Syst., p. 603.
1852.	„ „	McCoy,	Brit. Pal. Foss., p. 251.
1865.	„ „	Davidson,	Monogr. Sil. Brach., Palæont. Soc., p. 46, pl. ii., fig. 35.

Type.—One of eight specimens upon which Davidson based his description of the species, Sowerby's type being regarded as a varietal form. The only specimen figured showing the interior.

Norton, near Ludlow, Shropshire.
Transition Beds. *Coll. Lightbody.*

Lingula Lewisii, Sowerby, 1839.

1839. *Lingula Lewisii*, Sow., in Murch., Sil. Syst., pl. vi., fig. 9.
1852. „ „ McCoy, Brit. Pal. Foss., p. 253.
1859. „ „ Sow., in Murch., Siluria, pl. xx., fig. 5.
1865. „ „ Davidson, Monogr. Sil. Brach., Palæont. Soc., p. 35, pl. iii., fig. 2.

Type.—One of six specimens figured by Davidson as types of the species.

Whitcliff, Ludlow, Shropshire.

Upper Ludlow. *Coll. Lightbody.*

Discina rugata (Sowerby), 1839.

1839. *Orbicula rugata*, Sow., in Murch., Sil. Syst., pl. v., fig. 11.
1852. *Discina* „ McCoy, Brit. Pal. Foss., p. 190.
1859. „ „ Salter, in Murch., Siluria, pl. xx., figs. 1, 2.
1865. „ „ Davidson, Monogr. Sil. Brach., Palæont. Soc., p. 63, pl. v., figs. 9 to 18.

Type.—Original of Figure 11 in Davidson's Monograph. The original of figure 12 has not been traced.

Whitcliff, Ludlow, Shropshire.

Upper Ludlow. *Coll. Lightbody.*

Discina striata (Sowerby), 1839.

1839. *Orbicula striata*, Sow., in Murch. Sil. Syst., pl. v., fig. 21.
1859. „ „ Id., in Murch., Siluria, pl. xx., fig. 3.
1862. *Discina* „ McCoy, Brit. Pal. Foss., p. 191.
1865. „ „ Davidson, Monogr. Sil. Brach., Palæont. Soc., p. 67, pl. vi., fig. 4.

Type.—The original of Figure 4 in Davidson's Monograph should be in the Lightbody Collection, but has not yet been found.

ECHINODERMATA.

Apiocrinus elegans (Defrance), 1819.

1819. *Astropodium elegans*, Defrance, Dict. des sciences naturelles.
1820. *Encrinites Parkinsoni*, Schlotheim, Petrefaktenkunde.
1821. *Apiocrinites rotundatus*, Miller, Nat. Hist. Crinoidea, p. 18.
1826. *Pear Encrinus*, Cumberland, Reliquiæ Conservatæ, p. 4, pl. i., ii.

The nomenclature of the species here adopted has been suggested by Mr. F. A. Bather.

A series of specimens figured in Cumberland's work.

(A) Basal fragments of stem, p. 5, pl. i., figs. 2, 3, 8, and 9.

(B) Basal fragments of stem (?) pl. ii., fig. 10.

(C) Heads, p. 4, pl. i., figs. 6 and 7.

(D) Section of stem, p. 6, pl. ii., fig. 11.

Bradford, Wiltshire.

Bradford Clay. *Coll. Cumberland.*

Dendrocrinus (?) **Cambrensis,** Hicks, 1873.

1873. *Dendrocrinus* (?) *Cambrensis,* Hicks, Quart. Journ. Geol. Soc., xxix., p. 51, pl. iv., fig. 20.

TYPE.—The largest and most complete of four specimens upon which the species is founded. The remaining three are in the possession of the Woodwardian Museum, Cambridge.

Ramsey Island, S. Wales.

Tremadoc Slates. *Coll. Lightbody.*

Palasterina Ramseyensis, Hicks, 1873.

1873. *Palasterina Ramseyensis,* Hicks, Quart. Journ. Geol. Soc , xxix., p. 57, pl. iv., figs. 21 and 22.

TYPES.—Two of the three specimens upon which the species was founded. The third is in the Woodwardian Museum, Cambridge.

Ramsey Island, S. Wales.

Tremadoc Slates. *Coll. Lightbody.*

MOLLUSCA.

Anthracomya Phillipsii (Williamson), 1836.

1836. *Unio Phillipsii,* Williamson, Phil. Mag., p. 351.
1839. „ *linguiformis,* Phillips, in Murch., Sil. Syst., p. 88.
1855. *Modiola sp.,* Binney, Mem. Lit. and Phil. Soc., Manch., p. 221.

1865. *Anthracomya Phillipsii*, Huxley and Etheridge, Cat. Foss. Mus. Pract. Geol., pp. 157 and 160.
1870. „ „ Jones, Geol. Mag., p. 217.
1877. „ „ Etheridge, jun., Geol. Mag. (2), iv., p. 243, pl. 12, figs. 6 and 7.

TYPES.—Two somewhat crushed specimens, the originals of Etheridge's figures.

Ardwick, Manchester.

Upper Coal Measures. *Coll. Williamson.*

Avicula (?) Kirkmanni (Brown), 1841.

1841. *Catillus Kirkmanni*, Brown, Trans. Manch. Geol. Soc., i., p. 225, pl. vii., fig. 66.

TYPE.—An oblong-ovate shell, a quarter of an inch in length; marked by well-defined concentric lines of growth. Umbones narrow and prominent. Upon a small slab of shale, 12 mm. square.

High Green Wood, Todmorden, Yorks.

Yoredale Shales, Carboniferous. *Coll. Gibson.*

Avicula (?) lævis (Brown), 1841.

1841. *Catillus lævis*, Brown, Trans. Manch. Geol. Soc., i., p. 226. pl. vii., fig. 67.
1849. „ „ Id., Foss Conch., p. 167, pl. lxvii., fig. 22.

TYPE.—An oblong-ovate shell, 18 mm. in length by 12 mm. in breadth. Strongly convex; surface marked by concentric lines of growth. Upon the surface of a slab of ironstone shale, one-and-a-quarter inches in length.

High Green Wood, Todmorden, Yorks.

Yoredale Shales, Carboniferous. *Coll. Gibson.*

Gervillia (?) minor, Brown, 1841.

1841. *Gervillia minor*, Brown, Trans. Manch. Geol. Soc., i., p. 227, pl. vii., fig. 70.
1849. „ „ Id., Foss. Conch., p. 165, pl. xl.**, fig. 31.

TYPE.—An ovate left valve, narrow in the region of the umbo, and marked by strong concentric folds; hinge-line long.

Three specimens are in the Gibson Collection, none of which agree very closely with the figure. The largest specimen is probably the one from which Brown drew his figure. Length, 10 mm.; breadth, 12 mm.

High Green Wood, Todmorden, Yorks.
Yoredale Shales, Carboniferous. *Coll. Gibson.*

Ctenodonta Cambrensis, Hicks, 1873.

1873. *Ctenodonta Cambrensis*, Hicks, Quart. Journ. Geol Soc., xxix., p. 47, pl. v., figs. 8 and 9.
1873. „ *elongata*, Id., In Salter, Cat. Camb. and Sil. Foss., p. 24.

TYPE.—Internal cast, the original of Fig. 9.
Ramsey Island, S. Wales.
Tremadoc Slates. *Coll. Homfray.*

Modiolopsis Cambrensis, Hicks, 1873.

1873. *Modiolopsis Cambrensis*, Hicks, Quart. Journ. Geol. Soc., xxix., p. 49, pl. v., fig. 14.

TYPE.—Shell over 25 mm. in length by about 12 mm. wide. Ovate; inflated along hinge-margin. Anterior border obtusely rounded; posterior border pointed. Surface covered by concentric lines of growth.

Ramsey Island, S. Wales.
Tremadoc Slates. *Coll. Lightbody.*

Trigonia spinosa, Parkinson, 1811.

1811. *Trigonia spinosa*, Parkinson, Organic Remains, iii., pl. xii., fig. 7.
1815. „ „ Sowerby, Min. Conch., p. 196.
1854. „ „ Morris, Cat. Brit. Foss., p. 229.
1875. „ „ Lycett, Monogr. Foss. Trigonia, Palæont. Soc., p. 136, pl. xxiv., fig. 9.

TYPE.—Original of Lycett's figure. One valve only.
Blackdown, Isle of Wight.
Greensand. *Coll. Williamson.*

Davidia plana, Hicks, 1873.

1873. *Davidia plana*, Hicks, Quart. Journ. Geol. Soc., xxix., p. 49, pl. v., fig. 13.

TYPE.—Ovate, nearly 25 mm. long, and rather less than 12 mm. wide, both extremities abruptly rounded. Beak pointed, and slightly incurved.

Ramsey Island, S. Wales.

Tremadoc Slates. *Coll. Lightbody.*

Euomphalus Gloveri (Brown), 1841.

1841. *Cirrus Gloveri*, Brown, Trans. Manch. Geol. Soc., i., p. 223, pl. vii., figs. 46, 47.

TYPE.—Three internal casts of this species are all that can be found. Shell a very short spiral of three whorls, which increase very rapidly, and terminate in a round aperture.

High Green Wood, Hebden Bridge, Yorks.

Yoredale Shales. *Coll. Gibson.*

Macrocheilus Flemingii (Brown), 1841.

1841. *Buccinum Flemingii*, Brown, Trans. Manch. Geol. Soc., i., p. 222, pl. vii., fig. 52.

1849. „ „ Id., Foss. Conch., p 251, pl. xxi.*, fig. 52.

TYPE.—Shell oblong-ovate, smooth; spire short, of three whorls, the last much swollen. Length, 10 mm.; breadth, 5 mm.

High Green Wood, Todmorden, Yorks.

Yoredale Shales. *Coll. Gibson.*

Macrocheilus Manni (Brown), 1841.

1841. *Buccinum Manni*, Brown, Trans. Manch. Geol. Soc., i., p. 221, pl. vii, figs. 53, 54.

1849. „ „ Id., Foss. Conch., p. 251, pl. xxi.*, figs. 53, 54.

TYPE.—Shell with four gradually tapering whorls, terminating in an acute apex. Length, 3 mm.

High Green Wood, Todmorden, Yorks.

Yoredale Shales. *Coll. Gibson.*

Goniatites intermedius, Brown, 1841.

1841. *Goniatites intermedius*, Brown, Trans. Manch Geol. Soc., i., p. 213, pl. vii., figs. 6, 7, 8.
1849. „ „ Id., Foss. Conch., p. 246, pl. xxix.*, figs. 6, 7.

Two specimens only bearing this name have been found. They agree generally with Brown's description and Figures 6 and 7, but are rather smaller than the latter.

Lambert Clough, Todmorden, Yorks.
Yoredale Shales. *Coll. Gibson.*

Goniatites jugosus, Brown, 1841.

1841. *Goniatites jugosus*, Brown, Trans. Manch. Geol. Soc., i., p. 215, pl. vii., figs. 14, 15.
1849. „ „ Id., Foss. Conch., p. 247, pl. xxi.*, figs. 14, 15.

Type.—Shell discoidal, crossed by numerous strong ribs, which bifurcate or trifurcate in crossing the very broad ventral surface; ventral surface bearing a deep smooth groove; umbilicus broad and shallow. Much like *G. Gibsoni*, but differs in the smooth dorsal groove and the character of the septa. Breadth of largest specimen, 7 mm.

Hebden Bridge, Yorks.
Yoredale Shales. *Coll. Gibson.*

Goniatites Kenyoni, Brown, 1841.

1841. *Goniatites Kenyoni*, Brown, Trans Manch Geol. Soc., i., p. 216, pl. vii., figs. 19, 20.
1849. „ „ Id., Foss. Conch., p. 247, pl. xxi.*, figs. 19, 20.

Six specimens bearing this name are in the Gibson Collection, but none are so large as Brown's figure.

Hebden Bridge, Yorks.
Yoredale Shales. *Coll. Gibson.*

Goniatites Longthorni, Brown, 1841.

1841. *Goniatites Longthorni*, Brown, Trans. Manch. Geol. Soc., i., p. 216, pl. vii., figs. 23-26.

1849. „ „ Id., Foss. Conch., p. 247, pl. xxi.*, figs. 23-26.

The specimens in the Gibson Collection bearing this name are much unlike Brown's figures; his description, however, applies fairly well.

Shell discoidal, crossed by a great number of fine striæ, which curve sharply forward on the sides, as in *G. bilinguis*, and curve backwards again over the ventral surface; umbilicus minute. One specimen must have had a diameter of 50 mm.

Hebden Bridge, Yorks.

Yoredale Shales. *Coll. Gibson.*

Goniatites minutissimus, Brown, 1841.

1841. *Goniatites minutissimus*, Brown, Trans. Manch. Geol. Soc., i., p 218, pl. vii., figs. 29-31.

1849. „ „ Id., Foss. Conch., p. 248, pl. xxi.*, figs. 29-31.

Types.—An exceedingly minute Goniatite, possibly the young of some other species.

Shell sub-globose, mouth aperture semilunar, umbilicus wide. Breadth, 0·5 mm.

Millwood, Todmorden, Yorks.

Yoredale Shales. *Coll. Gibson.*

Goniatites paradoxicus, Brown, 1841.

1841. *Goniatites paradoxicus*, Brown, Trans. Manch. Geol. Soc., i., p. 216, pl. vii., figs. 21, 22.

1849. „ „ Id., Foss. Conch., p. 247, pl. xxi.*, figs. 21, 22.

Type.—A single specimen, the outer shelly matter gone. Shell a little flattened laterally, with a minute umbilicus. Breadth, 3 mm.

High Green Wood, Yorks.

Yoredale Shales. *Coll. Gibson.*

Goniatites undulatus, Brown, 1841.

1841. *Goniatites undulatus*, Brown, Trans. Manch. Geol. Soc., i., p. 213, pl. vii , figs. 1, 2, 3, 4, and 5.
1849. „ „ Id., Foss. Conch., p 246, pl. xxix.*, figs. 1, 2, 3, 4, and 5.

Types.—Shell sub-globose, crossed by fine raised lines, which divide upon the side, curving backwards over the ventral border, which is very broad; umbilicus small.

Lambert's Clough, Todmorden, Yorks.
Yoredale Shales. *Coll. Gibson.*

Goniatites prœtus, Brown, 1841.

1841. *Goniatites prœtus*, Brown, Trans. Manch. Geol. Soc , i , p. 217, pl. vii., figs. 27, 28.
1849. „ „ Id., Foss. Conch., p. 248, pl. xxi.*, figs. 27, 28.

Types.—Six specimens, of which one appears to be the original of Brown's figure.

Shell discoidal, whorls many; mouth aperture high; umbilicus wide, and bordered by a fine raised ridge. Breadth, 10 mm.

Lob Mill, Todmorden, Yorks.
Yoredale Shales. *Coll. Gibson.*

Goniatites subsulcatus, Brown, 1841.

1841. *Goniatites subsulcatus*, Brown, Trans. Manch. Geol. Soc., i.. p. 214, pl. vii., figs. 9, 10.
1849 „ „ Id , Foss. Conch., p. 247, pl. xxi.*, figs. 8, 9, 10.

Types.—A series of fine specimens, one of which must have been the original of Brown's figure. Probably the specimens upon which this species is founded are adult forms of *G. jugosus*.

Hebden Bridge, Yorks.
Yoredale Shales. *Coll. Gibson.*

Goniatites Smithii, Brown, 1841.

1841. *Goniatites Smithii*, Brown, Trans. Manch. Geol. Soc., i., p. 218, pl. vii., figs. 34, 35.
1849. „ „ Id., Foss. Conch, p. 248, pl. xxi.*, figs. 34, 35.

Type.—Shell globose, with strong transverse ribs; umbilicus wide. Breadth, 8 mm.

Millwood, Todmorden, Yorks.

Yoredale Shales. *Coll. Gibson.*

Orthoceras sericeum, Salter, 1866.

1866. *Orthoceras sericeum*, Salter, Mem. Geol. Surv., iii., p. 356.
1873. „ „ Id, Camb. and Sil. Foss., p. 18.
1873. „ *sp.* Hicks, Quart. Journ. Geol. Soc., xxix., p. 51.
1882. „ *sericeum*, Blake, Brit. Foss. Ceph, pt. 1, p. 138, pl xiii., figs. 1, 2.

Type.—An almost complete specimen, the original of Blake's Fig. 1.

Garth, Brecknockshire.

Upper Tremadoc Slates. *Coll. Homfray.*

Orthoceras dimidiatum, Sowerby, 1839.

1839. *Orthoceras dimidiatum*, Sow., in Murch., Sil. Syst., p. 620.
1852. „ „ McCoy, Brit. Pal Foss., p. 314.
1873. „ „ Salter, Camb and Sil Foss., pp. 98, 173.
1882. „ „ Blake, Brit. Foss Ceph, pt 1, pl vi., p. 103, figs 11 and 12

Type.—A specimen showing downward imbrications, the original of Blake's Figure 12.

Kington, Herefordshire.

Lower Ludlow. *Coll. Lightbody.*

Orthoceras perversum, Blake, 1882.

1839. *Orthoceras imbricatum*, (?) Sowerby, in Murch., Sil. Syst., p. 620.
1852. „ „ McCoy, Brit. Pal. Foss., p. 315.
1873. „ „ Salter, Camb. and Sil. Foss., p. 187.
1882. „ *perversum* Blake, Brit Foss. Ceph, pt. 1, p. 155, pl. xvi., figs. 1, 2.

Type.—A fine specimen, 22 cm. in length, the original of Blake's Figure 1.

Ludlow, Shropshire.

Upper Ludlow.

Orthoceras acicularis, Brown, 1841.

1841. *Orthoceras acicularis*, Brown, Trans. Manch. Geol. Soc, i., p. 220, pl. vii., fig. 39.
1849. „ „ Id., Foss. Conch., p. 249, pl. xxix*, fig. 29.

Type.—Shell long, and tapering very gradually to an acute apex. Marked by many equidistant transverse septa. The specimen has been flattened by pressure, and lies in a small slab of shale bearing a few Ostracodes.

Todmorden, Yorks.
Yoredale Shales. *Coll. Gibson.*

Orthoceras Browni, Gibson, 1841.

1841. *Orthoceras Browni*, Brown, Trans. Manch. Geol. Soc., i., p. 220, pl. vii., fig. 40
1849. „ „ Id., Foss., Conch, p. 249, pl. xxix.*, fig 31.

Type.—Shell arcuated; bearing a series of longitudinal angular ribs, crossed by fine oblique striæ; septa oblique, becoming increasingly separated as they ascend.

Todmorden, Yorks.
Shales of Millstone Grit Series. *Coll. Gibson.*

Orthoceras Gibsoni (Brown), 1841.

1841. *Belemnites Gibsoni*, Brown, Trans. Manch. Geol. Soc., i, p. 220, pl. vii, fig. 41.
1849. „ „ Id., Foss Conch., p 249, pl. xxix.*, fig. 28

Type.—Shell tapering but slowly, ending bluntly; section circular.

Crimsworth Dean, Yorks.
Yoredale Shales. *Coll. Gibson.*

Orthoceras obtusa, Brown, 1841.

1841. *Orthoceras obtusa*, Brown, Trans. Manch. Geol. Soc, i., p. 219, pl. vii., fig. 36.
1849. „ „ Id., Foss. Conch., p. 249, pl. xxix*, fig. 30.

Type.—Very stout shell, ending in a rounded extremity; surface marked by fine parallel undulating striæ, which suddenly increase in strength, and become more widely separated at about half the length. Length, 50 mm.; breadth, 30 mm.

High Green Wood, Yorks.
Yoredale Shales. *Coll. Gibson.*

Lituites ibex (Sowerby), 1839.

1838. *Lituites ibex*, Sow., in Murch., Sil. Syst., p. 622.
1848. *Orthoceras perelegans*, Salter, Mem. Geol. Survey, pt. 2, pl xiii., fig. 4 only.
1873. „ *tracheale*, Id., Camb. and Sil. Foss., p. 187.
1882. *Lituites ibex*, Blake, Brit. Foss. Ceph., pt. 1, pp. 95 and 228, pl. v., figs. 3, 3*a*, 4, 5, 8; pl. xviii., figs. 3, 4, 4*a*, 5.

Type.—Middle portion only, about 11 mm. in length. Original of Figs. 4 and 4*a* on pl. xviii.

Ludlow, Shropshire.
Upper Ludlow. *Coll. Lightbody.*

Trochoceras giganteum (Sowerby), 1839.

1839 *Lituites giganteus*, Sowerby, in Murch., Sil. Syst., p. 622.
1855. *Hortolus* „ McCoy, Brit. Pal. Foss., p. 324.
1873. *Trochoceras* „ Salter, Camb. and Sil. Foss., pp. 160, 174.
1882. „ „ Blake, Brit. Foss. Ceph., pt. 1, p. 223, pl. xxxi., figs. 1, 2.

Type.—Specimen figured by Blake to show the asymmetry and contracted mouth aperture.

Leintwardine, Shropshire.
Lower Ludlow. *Coll. Lightbody.*

CRUSTACEA.

Leaia Leidyi, var. Williamsoniana, Rupert Jones, 1862.

1836. *Bivalvular shell* Williamson, Phil. Mag., N. S., ix., p. 351.
1839. *Aptychus* Phillips, in Murch., Sil. Syst., i., p. 89.
1862. *Leaia Leidyi, var. Williamsoniana*, Rupert Jones, Append. Monogr. Foss. Estheriæ, Palæont. Soc., p. 117, pl. i, figs. 19, 20.

Type.—Two conjoined valves.

Ardwick, Manchester.
Upper Coal Measures. *Coll. Williamson.*

Carbonia Roederiana, Jones and Kirby, 1891.

1891. *Carbonia Roederiana*, Jones and Kirby, Trans. Manch. Geol. Soc., xxi., p. 138, pl. i., figs. 5 and 6.

Types.—Forms closely allied to *G. Rankiniana*, but having less relative length, and greater angularity of the dorsal and extreme borders.

Slade Lane, Longsight, Lancs.
Upper Coal Measures. *Coll. Roeder.*

Carbonia fabulina, Jones and Kirby, 1879.

1879. *Carbonia fabulina*, Jones and Kirby, Ann. and Mag. Nat. Hist. (5), iv., p. 31.
1891. „ „ Id., Trans. Manch. Geol. Soc., xxi., p. 139, pl. i., figs. 7 and 8.

Originals of the above-mentioned figures.

Slade Lane, Longsight, Lancs.
Upper Coal Measures. *Coll. Roeder.*

Carbonia Bairdoides, Jones and Kirby, 1879.

1879. *Cythere ? (Carbonia ?) Bairdoides*, Jones and Kirby, Ann. and Mag. Nat. Hist. (5), iv., p. 38.
1891. *Carbonia* Jones and Kirby, Trans. Manch. Geol. Soc., xxi., p. 139, pl. i., figs. 9 and 10.

Originals of the above-mentioned figures.

Slade Lane, Longsight, Lancs.
Upper Coal Measures. *Coll. Roeder.*

Carbonia Salteriana, Jones and Kirby, 1879.

1879. *Candona* (?) *Salteriana*, Jones and Kirby, Monogr. Foss. Estheriæ, Palæont. Soc., p. 122.
1891. *Carbonia* Id., Trans. Manch. Geol. Soc., xxi., p. 139, pl. i., figs. 11 and 12.

Originals of above-mentioned figures.
Slade Lane, Longsight, Lancs.
Upper Coal Measures. *Coll. Roeder.*

Carbonia pungens, Jones and Kirby, 1879.

1879. *Carbonia pungens*, Jones and Kirby, Ann. and Mag. Nat. Hist. (5), iv. p. 37.

1891. „ „ Id., Trans. Manch. Geol. Soc, xxi., p. 138, pl. i., figs. 1 and 2.

Originals of the above-mentioned figures. First recorded occurrence in English deposits.

Slade Lane, Longsight, Lancs.

Upper Coal Measures. *Coll. Roeder.*

Carbonia secans, Jones and Kirby, 1879.

1879. *Carbonia secans*, Jones and Kirby, Ann. and Mag Nat. Hist. (5), iv., p. 37.

1891. „ „ Id., Trans. Manch. Geol. Soc., xxi. p. 138, pl. i., figs. 3 and 4.

Originals of the above-mentioned figures.

Slade Lane, Longsight, Lancs.

Upper Coal Measures. *Coll. Roeder.*

Ceratiocaris minuta, Jones and Woodward, 1886.

1885. *Ceratiocaris sp. nov.*, (?) Third Report Pal. Phyll., p. 350, Geol. Mag., p. 464.

1886. „ *minuta*, Fourth Report Pal. Phyll., p. 231, Geol. Mag., p. 458.

1888. „ „ Jones and Woodw., Brit. Pal. Phyll., Palæont. Soc., p. 47, pl. x., fig. 11.

Type.—Caudal appendage only.

Old road at Mocktree, Shropshire.

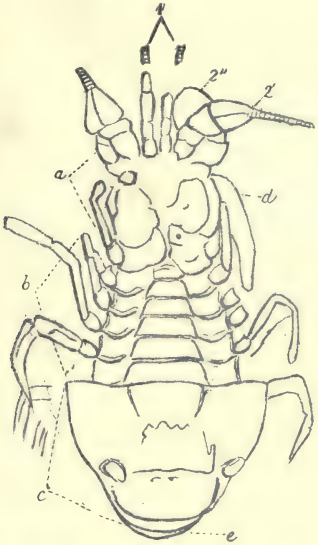
Lower Ludlow, or Aymestry Limestone.

Coll. Lightbody.

Pygocephalus Cooperi, Huxley, 1857.

1857. *Pygocephalus Cooperi*, Huxley, Quart. Journ. Geol. Soc., xiii., p. 363, pl. xii., figs. 1, 1*a*, 1*b*.

1862. „ „ Id., Quart Journ. Geol. Soc., xviii., p. 421.



Pygocephalus Cooperi, Huxley, magnified 1½ diameter. *a*, Quadrate disk; *b*, Central part of the body; *c*, Semicircular disk; *d*, Marginal portions of Carapace; *e*, Tergal surface of abdominal somites; 1′, Antennules; 2′, Base and inner division of antenna; 2″, Outer division of antenna or scale.

Type.—The most complete of three specimens upon which Huxley founded the species. Huxley speaks of this species as affording "the first certain evidence of the existence of Podophthalmia at so early a period as the Carboniferous epoch."

Medlock Park Bridge, Ashton-under-Lyne, Lancs.

Shale of Middle Coal Measures.

Hymenocaris vermicauda, Salter, 1852.

1852. *Hymenocaris vermicauda*, Salter, Rep. Brit. Assoc., p. 58.

— „ „ Id., Quart. Journ. Geol. Soc., x., p. 210.

— „ „ Id., Mem. Geol. Surv. iii., p. 293.

1892. „ „ Jones and Woodw., Brit. Pal. Phyll., Palæont. Soc., p. 77, pl. xiii., figs. 10 and 11.

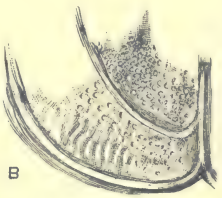
Two specimens showing body segments only, figured by Dr. Woodward.

Carrig-Felyn.

Lingula Flags. *Coll. Homfray.*

Cyclus Scotti, sp. nov.*

A



B

A Dorsal aspect of carapace; natural size.

B Left postero-lateral margin, magnified to show ornamentation.

Type.—Shield, or carapace, nearly circular in outline, bilaterally symmetrical (25 mm. broad by 20 mm. long), having a well-marked median ridge dividing the carapace in half for 8 mm. from the posterior border; posterior margin slightly indented or notched in the centre; the lateral and posterior margins of the shield encircled by a smooth raised rim, which stops short at the antero-lateral margin (which is slightly compressed where the rim terminates), the shield being truncated for a breadth of 12 mm. in front. There is evidence on the right side of a slight extension of the smooth margin of the shield outside the raised rim; anteriorly the shield is ornamented by four nearly equal oval prominences, each being about 5 mm. long, placed two on either side of the central line,† with their longer axis directed towards the front of the shield; a well-marked, smooth, semicircular ridge occupies the centre of each lateral area, and unites with the raised median ridge near the posterior border of the shield. The area enclosed between the outer and median ridges becomes

* The description and notes are from the pen of Dr. H. Woodward, F.R.S.

† The two inner oval prominences have been *largely cut away* in an injudicious attempt to develop the anterior part of carapace.

considerably narrower as these approach the centre, near the posterior region of the carapace. The median ridge ends in front, close to the outer pair of oval prominences; two other rather semicircular smooth raised ridges, broader and shorter than the preceding ridge (by which, indeed, they are encircled), occupy the inner and more central portion of the shield, the outer one commencing near to the inner one on the central ridge, at 5mm. distance from the posterior border, and curving forwards until they touch the posterior ends of the two pairs of oval prominences near the front of the carapace. In the centre, between these raised ridges and the oval bodies, is a small lozenge-shaped area, which is continued backwards till it unites with the median ridge of the shield. The surface of the shield (particularly the posterior portion) is very finely granulated with minute circular and oval pustules (see wood-cut, Fig. B). No eye-spots are observable (unless a pair of the oval prominences in front may represent eyes). There is no trace of any appendages to be discerned on the matrix.

Observations.—Of the seven species of *Cyclus* described by me from this country, six are from the Carboniferous Limestone of Yorkshire and Ireland (see Geol. Mag., 1870, vol. vii., pp. 554-558, pl. 23), and one from the Coal-Shales of Carluke, Scotland (see Brit. Assoc. Reports, 1868, p. 72, pl. ii., fig. 1, and op. cit.) Several specimens, not yet described, were obtained, many years since, from the Pennystone Ironstone, over the thick coal of the Staffordshire Coal-field, at Coseley, near Dudley, by the late Mr. Henry Johnson, C.E., F.G.S., of Dudley, and an account of them will be shortly published.

In general outline this species from Bacup resembles most nearly *Cyclus (Halicyne?) agnotus*, H. von Meyer, sp., from the Muschelkalk of Rottweil, Germany (see Palæontographica, 1847, i., p. 234, pl. xix., fig. 23), but it differs in having an indentation or notch in the posterior border, whereas the German specimen has a small prominence. The

arrangement of the ornamentation of the shield is also very distinct. I have, therefore, no hesitation in treating it as a new species, and have named it *Cyclus Scotti*, after its discoverer, Mr. George Scott, by whom it was presented, some time ago, to the Manchester Museum, Owens College.

Old Meadows Colliery, Bacup, Lancs.

Gannister Coal Shales, Lower Coal Measures.

Donor, G. Scott.

TRILOBITA.

Arionellus longicephalus, Hicks, 1872.

1872. *Arionellus longicephalus*, Hicks, Quart. Journ. Geol. Soc., xxviii., p. 176, pl. v., figs. 24-26.

Types.—Three out of seven specimens upon which Dr. Hicks founded the species.

The originals of Figures 24 and 25 are minus the head.

Maentwrog, N. Wales.

Menevian. *Coll. Homfray.*

Niobe Menapiensis, Hicks, 1873.

1873. *Niobe Menapiensis*, Hicks, Quart. Journ. Geol. Soc., xxix., p. 46, pl. iv., figs. 5-9.

Types.—Five out of nine incomplete specimens upon which Dr. Hicks founded the species. The original of Figure 5 is a glabella; that of Figure 6 a whole body, but wanting the head; the remaining three are pygidia.

Ramsey Island, and St. David's, S. Wales.

Tremadoc Slates. *Coll. Homfray.*

Niobe Homfrayi, Salter, 1864.

1864. *Niobe Homfrayi*, Salter, Monogr. Camb. and Sil. Tril., Palæont. Soc., p. 164, pl. xx., fig. 3.

1866. „ „ Id., Append. Ramsay's Geol. N. Wales, Mem. Geol. Surv., iii., p. 314.

Type.—The original of Figure 3 in Salter's Monograph; an almost complete specimen, wanting only the free cheeks.

Penmorfa Church, Tremadoc, N. Wales.

Lower Tremadoc Slates. *Coll. Homfray.*

Neseuretus Ramseyensis, Hicks, 1873.

1873. *Neseuretus Ramseyensis*, Hicks, Quart. Journ. Geol. Soc., xxix., p. 44, pl. iii., figs. 7-10, and 16-22.

TYPE.—A fragmentary pygidium, the original of Figure 20. The originals of Figures 8, 9, 15, 16, 18, 19, and 22 are in the Woodwardian Museum, Cambridge.

Ramsey Island, S. Wales.

Lower Tremadoc Slates. *Coll. Homfray.*

Neseuretus quadratus, Hicks, 1873.

1873. *Neseuretus quadratus*, Hicks, Quart. Journ. Geol. Soc., xxix., p 45, pl. iii., figs. 11-13, and 23, 26.

TYPE.—A distorted pygidium, the original of Figure 6. The remaining specimens, upon which Dr. Hicks founded the species, are in the Woodwardian Museum, Cambridge.

Ramsey Island, S. Wales.

Lower Tremadoc Slates. *Coll. Homfray.*

Neseuretus sp., Hicks, 1873.

1873. *Neseuretus, sp.*, Hicks, Quart. Journ. Geol Soc., xxix., pl. iii., fig. 14.

A left free cheek only.

St. David's, S. Wales.

Lower Tremadoc Slates. *Coll. Homfray.*

Neseuretus, sp., Hicks, 1873.

1873. *Neseuretus, sp.*, Hicks, Quart. Journ. Geol. Soc., xxix., Expl. to pl. iii., fig. 20.

A somewhat fragmentary pygidium.

Ramsey Island, S. Wales.

Lower Tremadoc Slates. *Coll. Homfray.*

Phillipsia gemmulifera (Phillips), 1836.

1836. *Asaphus gemmulifera*, Phillips, Geol. Yorkshire, p. 240.
1843. *Phillipsia Kelli*, Portl., Rep. Geol. Londonderry, p. 307.
1844. „ *quadriserialis*, McCoy, Syn. Carb. Foss. Ireland, p. 162.
1883-4. „ *gemmulifera*, Woodw., Monogr. Brit. Carb. Tril., Palæont. Soc., pp. 17 and 45, pl. iii., figs. 1-8.
1888. „ *pustulata*, Etheridge, Cat. Brit. Pal. Foss., p. 242.

TYPE.—An entire thorax and pygidium, but wanting the head, the original of Woodward's Fig. 3 on pl. iii. From the collection of J. Aitken, Esq., of Urmston, presented by Professor Williamson.

Clitheroe, Lancs.

Carboniferous Limestone. *Coll. Aitken.*

Griffithides acanthiceps, H. Woodward, 1883-4.

1883-4. *Griffithides acanthiceps*, H. Woodward, Monogr. Brit. Carb. Tril., Palæont. Soc., p. 32, pl. vi., figs. 2, 10, and 11; pl. vii., figs. 2 and 3.

TYPE.—An almost complete specimen, wanting only the right free cheek and anterior border of the glabella. The original of fig. 2 on pl. vii. From the collection of J. Aitken, Esq., of Urmston, presented by Professor Williamson.

Craco, Grassington, Yorks.

Carboniferous Limestone. *Coll. Aitken.*

MEROSTOMATA.

Eurypterus punctatus, Salter, 1859.

1859. *Eurypterus punctatus*, Salter, Mem. Geol. Surv. Brit., Org. Rem., Monogr. 1, p. 99, pl. xiii., fig. 11.

1872. „ „ Woodw., Brit. Foss. Merost., Palæont. Soc., p. 156.

TYPE.—A large endognathary palpus, bearing two spinous processes.

Whitcliff, Ludlow, Shropshire.

Upper Ludlow. *Coll. Lightbody.*

Pterygotus Ludensis, Salter, 1859.

1859. *Pterygotus Ludensis*, Salter, Mem. Geol. Surv. Brit., Org. Rem., Monogr. i., p. 79, pl. xiv., figs. 7, 8.

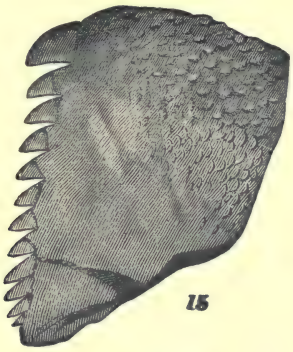
1872. „ „ Woodw., Brit. Foss. Merost., Palæont. Soc., p. 76, pl. xvi., fig. 9, woodcut 15.

TYPE.—The originals of the above-mentioned figures. (A) Basal joint of an ectognath, with short serrations (Fig. 8).

Railway Cutting, Ludlow, Shropshire.

Upper Ludlow or Transition Beds.

(B) An endognath, the original of Fig. 7.
Ludlow, Shropshire.
Upper Ludlow or Transition Beds. *Coll. Lightbody.*



Mandibular border of ectognath of Pterygotus Ludensis, Salter (Natural size).

(C) Part of the serrated border of a large ectognath (Woodward's woodcut 15).
Railway Cutting, Ludlow, Shropshire.
Upper Ludlow or Transition Beds. *Coll. Lightbody.*

Pterygotus Banksii, Salter, 1856.

1856. *Himanopterus Banksii*, Salter, Quart. Journ. Geol. Soc., xii., pp. 32 and 99.
1859. *Pterygotus* „ Id., Mem. Geol. Surv. Brit., Org. Rem., Monogr. i., pp. 51, 59, pl. xii., figs. 22, 40.
1872. „ „ Woodw., Brit. Foss. Merost., Palæont. Soc., p. 72, pl. xvi., fig. 2.

Type.—(A) Complete carapace, original of Salter's Figure 22.
Ludlow, Shropshire.
Transition Beds. *Coll. Lightbody.*

(B) Impression of fragment of antennary chela. Obverse of original of above-mentioned Figure 40 of Salter.
Ludford Lane, Ludlow, Shropshire.
Upper Ludlow, or Transition Beds. *Coll. Lightbody.*

Stylonurus megalops, Salter, 1859.

1859. *Eurypterus megalops*, Salter, Quart., Journ. Geol. Soc., xv., p. 233, pl. x., fig. 10.

1872. *Stylonurus* ,, Woodw., Brit. Foss. Merost., Palæont. Soc., p. 124.

Type.—One of six specimens upon which the species is founded. It consists of a little more than half of the anterior portion of a carapace.

The whole of the type-specimens of this species are probably in the Lightbody Collection, but cannot at present be traced.

Railway Cutting, Ludlow, Shropshire.

Transition Beds. *Coll. Lightbody.*

PISCES.

Cyathaspis Banksii (Huxley and Salter), 1856.

1856. *Pteraspis Banksii*, Huxley and Salter, Quart. Journ. Geol. Soc., xii., p. 100.

1867. *Cyathaspis* ,, Lankester and Powrie, Monogr. Old Red Sandstone Fishes, Palæont. Soc., p. 26, pl. iv., fig. 6.

Type.—A well-preserved head-shield.

Bradnor Hill, Herefordshire.

Transition Beds. *Coll. Lightbody.*

Auchenaspis Salteri, Egerton, 1857.

1857. *Auchenaspis Salteri*, Egerton, Quart. Journ. Geol. Soc., xiii., p. 286, pl. ix., figs. 4 and 5.

Types.—Two small head-shields, 12 mm. in diameter, figured and described by Egerton.

Railway Cutting, Ludlow, Shropshire.

Upper Ludlow. *Coll. Lightbody.*

Plectrodus mirabilis (?), Agassiz, 1857.

1857. *Plectrodus mirabilis*, Agassiz, Quart. Journ. Geol. Soc., xiii., p. 288, pl. x., figs. 3*a*. 3*b*.

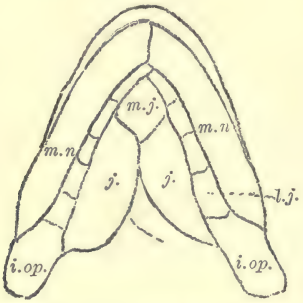
Small fragment, and impression of jaw.

Paper Mill, Ludlow, Shropshire.

Transition Beds. *Coll. Lightbody.*

Diplopterus Agassizii, Traill, 1841.

1841. *Diplopterus Agassizii*, Traill, Trans. Roy. Soc. Edin., xv., p. 89.
1892. „ „ Traquair, Ann. and Mag. Nat. Hist. (6) vi., p. 484, fig 3.



Under surface of the head of *Diplopterus Agassizii*, reduced one-third. *m.n.*, mandible; *i.op.*, interoperculum; *j.*, principal jugal; *m.j.*, median jugal; *l.j.*, lateral jugal plates.

Impression of the fish lying on its back. The lateral jugals are particularly well marked; there are five on the right side, four on the left.

Achanarras, Caithness.

Old Red Sandstone. *Coll. Edwards.*

Pleuracanthus lævissimus, Agassiz, 1837.

1837. *Pleuracanthus lævissimus*, Ag., Poiss. Foss., iii., p. 66.
1892. „ „ Davis, Trans. Roy. Dublin Soc., iv., p. 730, pl. lxx., fig. 8.

Figured specimen of a Gill-raker. A small bony ossicle, bearing a series of fine-pointed denticles.

Locality (?)

Middle Coal Measures.

Pleuracanthus undulatus, J. W. Davis, 1892.

1892. *Pleuracanthus undulatus*, Davis, Trans. Roy. Dublin Soc, N.S., iv., p. 737, pl lxxii., fig. 16.

Type.—Spine 12·3 cm. in length, bearing upon its upper posterior surface two rows of denticles widely separated and diagonally arranged, those of one row being slightly in advance of those of the other; readily distinguished by the larger and widely separated posterior denticulation.

Thin-bed Coal, Fulledge Colliery, Burnley, Lancs.

Middle Coal Measures. *Donor, G. Wild.*

Onchus, sp., Egerton.

1857. *Onchus, sp.* Egerton, Quart. Journ. Geol. Soc., xiii., p. 288, pl. x., figs. *7a*, *7b*.

1888. *Tail spine of Pterygotus* (*?*) Etheridge, Cat. Brit. Pal. Foss., p. 128.

A strongly curved longitudinally ribbed spine, armed with denticles along its posterior border.

Railway Cutting, Ludlow, Shropshire.
Transition Beds. *Coll. Lightbody.*

Myriolepis Hibernica, sp. nov.*

Type.—Of the fossil fish now to be described I know only two specimens, of which one is in the Manchester Museum, Owens College, the other in the Museum of Practical Geology, Jermyn Street, London. Both are from the Coal Measures, Jarrow Colliery, Co. Kilkenny, Ireland.

The Manchester specimen is imperfect, being broken off about half an inch behind the anal fin; the dorsal fin is also deficient, but its position is indicated by the subjacent fin-supports. The pectoral, ventral, and anal fins are present.

The measurements are as follows:—

Entire length of the specimen, so far as preserved ...	7½ in. (18·75 cm.)
From tip of snout to origin of pectoral fin	2 „ (5 cm.)
„ „ „ „ ventral „	4 „ (10 cm.)
„ beginning of pectoral to beginning of ventral fin	2¼ „ (5·7 cm.)
„ „ ventral „ „ anal „	1⅞ „ (4·8 cm.)
Depth of body at origin of ventral fin	3 „ (7·5 cm.)
Length of head to posterior margin of gill cover	2¼ „ (10 cm.)

The head shows scarcely any detail, though it is at once apparent that its structure was typically Palæoniscoid, with anteriorly placed orbit, oblique suspensorium, and wide gape. Its length is contained 3½ times in the total up to the tail pedicle, where the specimen is broken off.

* The following description and notes are from the pen of Dr. Traquair, F.R.S.

The rather deeply fusiform body is shown to have been covered with rhombic scales, which were exceedingly small in proportion to the size of the fish, those in the front of the flank measuring only $\frac{1}{20}$ in. in height and breadth; only feeble traces of a striated ornament are observable on them. Some large median scales are seen in front of the dorsal fin.

The scales must also have been very thin, as they have allowed the contour of the bones of the internal skeleton to be tolerably distinctly indicated through them, these indications being in the form of impressions of vertebral arches and spines, and of interspinous bones or fin-supports. The skeleton as thus exhibited is typically Palæoniscoid.

The fins which are preserved are of moderate size, even small for the size of the fish. The pectoral is not completely shown, though enough is preserved to show that it consisted of numerous fine closely set rays, which were also closely articulated, the principal rays being also jointed up to their origins. The ventral fin is small and narrow, with fine rays of a character similar to those of the pectoral. The anal is triangular-acuminate, its hinder margin somewhat concavely excavated, and consists likewise of numerous fine closely set rays, whose transverse articulations are extremely close. The dorsal fin is not preserved, but, judging from the position of its supporting ossicles, it must have occupied a position nearly opposite the interval between the ventral and anal.

The specimen in the museum at Jermyn Street, London, represents a somewhat larger fish, the length from the front of the head to the posterior termination of the base of the anal fin being $8\frac{1}{2}$ in. (about 20 cm.), and here it is broken off, nearly at the very place where the same has happened to the one at Owens College. However, the dorsal fin is preserved, and shows a contour and structure similar to those of the anal in both examples.

There can be no doubt that this fish is new to science as a species; the only question remaining for consideration is that of the genus to which it should be referred. The Carboniferous genera to which it seems most closely allied are *Elonichthys* and *Acrolepis;* but it is excluded from both by the very small size and thinness of the scales, and more especially from *Acrolepis* by the rays of the pectoral fin being articulated to their origins.

So far as the smallness of the scales and the arrangement of the fins is concerned, there is a very considerable resemblance between the present fish and the early mesozoic genus *Myriolepis*, as described originally by the late Sir Philip Egerton,* and more recently by Mr. A. Smith Woodward.† But the condition, as to articulation, of the rays of the pectoral fin of *Myriolepis* does not seem yet to be known, and should its principal rays turn out not to be articulated up to their origins, as in the present fish, there is little doubt that a new genus must be constituted for the reception of the latter.

Though it does strike one as slightly improbable that the same genus of Palæoniscidæ should persist from Carboniferous to Triassic times, I feel the setting up of new genera in this already most extensive family, without absolute demonstration of its necessity, becoming more and more distasteful. I therefore refer this interesting Irish Carboniferous Palæoniscid to the genus *Myriolepis*, under the name of *M. Hibernica;* though it must be distinctly understood that this reference is only provisional, and awaiting confirmation, or the reverse, by the further development of our knowledge of the type species of the genus.

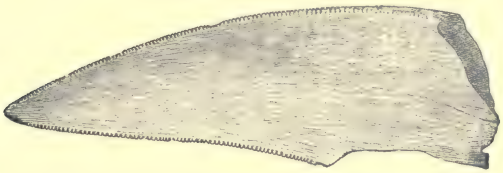
* Quart. Journ. Geol. Soc., xx., 1864, p. 2.

† "The Fossil Fishes of the Hawkesbury Beds at Gosforth (New South Wales)," pp. 7-11.

MAMMALIA.

Machærodus latidens, Owen.

1846. *Machærodus latidens*, Owen, Brit. Foss. Mamm., p. 179.
1872. „ „ Dawkins and Sandford, Brit. Pleist. Mamm., Palæont. Soc., pt. 4, p. 184.
1877. „ „ Dawkins, Quart. Journ. Geol. Soc. xxxiii., p. 594, fig. 3.
1880. „ „ Id., "Early Man in Britain," p. 186, fig. 58.



Upper Canine of *Machærodus*. Robin Hood Cave.

Crown of upper canine.
Robin Hood Cave, Derbyshire.
Pleistocene. *Coll. Dawkins.*

Elephas primigenius, Blumenbach, 1803.

1803. *Elephas primigenius*, Blumenbach, Handb. der Naturgeschichte, p. 407.
1833. „ „ S. Woodw., Syn. Tab. and Geol. Norfolk, p. 50.
1846. „ „ Owen, Brit. Foss. Mamm., p. 217.
1879. „ „ W. Boyd Dawkins; in, A. Leith Adams, Brit. Foss. Elephants, Palæont. Soc., pt. 2., p. 87-89, pl. viii., figs. 4-7.

A series of four First Functional Milk Molars, described and figured as above.

Right lower milk molar, from Church Hole Cave.
„ „ „ „ „ Wookey Hole Cave.
„ upper „ „ „ Robin Hood Cave.
„ „ „ „ „ Wookey Hole Cave.
Pleistocene. *Coll. Dawkins.*

W. TOWNSEND AND SON, SURREY STREET, SHEFFIELD.

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ADDENDA.

(Page 5.)—**Halonia regularis,** Binney, 1872.

Add the references :

1893. *Halonia regularis*, Williamson, Phil. Trans., Organ. Foss. Plants, Coal Measures, pt. xxix., p. 14, pl. v., fig. 24.

1893. ,, ,, *Id. Ibid.*, p. 14, pl. v., fig. 23.

The original of fig. 23 of Williamson and fig. 38 of Binney is the type.

(Page 5.)—Insert :

Lepidostrobus, Williamson, 1893.

1893. *Lepidostrobus*, Williamson, Phil. Trans., Organ. Foss. Plants, Coal Measures, pt. xxix., p. 16, pl. v., fig. 27A.

1893. ,, *Id. Ibid.*, p. 16, pl. vi., fig. 26A.

(Page 24.)—**Cyclus Scotti,** sp. nov.

Insert the reference :

1893. *Cyclus Scotti*, Woodward, Geol. Mag., Dec. iii., x., p. 28.

(Page 32.)—**Myriolepis Hibernica,** sp. nov.

Insert the reference:

1893. *Myriolepis Hibernica*, Traquair, Geol. Mag., Dec. iii., x., p. 54, pl. iii.

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